Lecture Module - To Err is Human

ME3023 - Measurements in Mechanical Systems

Mechanical Engineering
Tennessee Technological University

Topic 1 - Accuracy and Error



Topic 1 - Accuracy and Error

- Accuracy and Error
- Estimating Error
- Uncertainty Interval
- Activity with Data!

Accuracy and Error

he exact value of a variable is called the			
The value of the variables as indicated by a			
neasurement system is called the The			
of a measurement refers to the closeness of agreement			
between the measured value and the true value. But the			
is rarely known, and various			
fluences, called, have an effect on both of these			
alues. So the concept of theof a measurement is a			
one.			

Text: Theory and Design of Mech. Meas.

Estimating Error

The	can be e	estimated but cannot be
known	In practice a	value is used in
place of the t	rue value. We will discuss	this again the the
Calibration N	lodule.	
An estimate o	of error based using this va	alue is sometimes referred to

"The	is a numerical estimate of the possible range of
the error in a mea	asurement. In any measurement, the
is no	t known exactly since the true value is rarely
known exactly. B	ut based on available information, the operator
might feel confide	ent that the error is within certain bounds, a plus
or minus range of	the indicated reading. This is the assigned
"	

We will discuss this again the the *Uncertainty Module*.

Text: Theory and Design of Mech. Meas.

Experiment: We are going to collect data with the sensor suite on our phones.

Sensor:

- GPS concept graphic
- info from manufacturer

Logger Apps:

- sensorlogger (Android) Kelvin Choi
- Sensor Logger (OSX) -Choi Tsz Hei

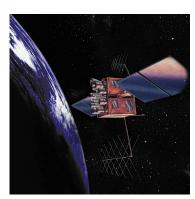
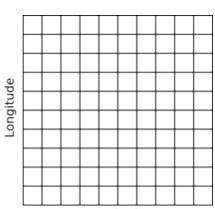


Image:Wikipedia



Part 1 - Informed Prediction: Generate data you expect the GPS in your phone to report.

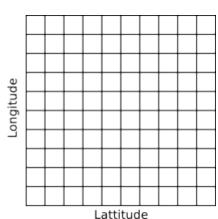
i	lat;	lon;
1		
2		
3		
4 5		
6		
7		
8		
8		
9		
10		



Lattitude

Part 3 - Measurement: Compare and constrast the data from the two sources.

i	lat;	lon;
1		
2		
3		
4 5 6		
5		
6		
7		
8		
8		
9		
10		



lmage: thill